Release notes for ENDF/B Development n-061_Pm_148m1 evaluation

April 26, 2017

- `psyche` Warnings:
  1. Strength function in URR not in agreement with PSYCHE's expectations
     FILE 2 / SECTION 151 / ISOTOPE MASS = 148. L = 0 / STRENGTH FUNCTION IS 6.60149E-04 / STRENGTH FUNCTION 6.60149E-04 / LIES OUTSIDE LIMITS 1.00000E-04 TO 6.00000E-04 (0): URR str. ftn.

```
FILE  2
   SECTION 151
        ISOTOPE MASS = 148. L =  0
                 STRENGTH FUNCTION IS  6.60149E-04
                              STRENGTH FUNCTION 6.60149E-04
... [1 more lines]
```

- `recent` Warnings:
  1. Statistical weight of certain L values were incorrect
     0: RRR goof (a)

```
 Calculate Cross Sections from Resonance Parameters (RECENT 2015-1)
 ================================================================================
 Retrieval Criteria-----------        MAT
 File 2 Mimimum Cross Section- 1.0000E-10 (Standard Option)
 Reactions with No Background-     Output (Resonance Contribution)
... [130 more lines]
```

- `fudge-4.0` Warnings:
  1. Missing a channel with a particular angular momenta combination
     resonances / resolved (Error # 1): missingResonanceChannel

```
WARNING: Missing a channel with angular momenta combination L = 0, J = 4.5 and S = 4.5 for "capture"
WARNING: Missing a channel with angular momenta combination L = 0, J = 6.5 and S = 6.5 for "capture"
```

  2. Potential scattering hasn't converted, you need more L's!
     resonances / resolved (Error # 2): potentialScatteringNotConverged

```
WARNING: Potential scattering hasn't converged by L=0 at E=1.0 eV, xs[0]/xs[0]=100.0% > 0.1%
```

- `fudge-4.0` Errors:
  1. The spin statistical weights are off, indicating missing channels
     resonances / resolved / MultiLevel_BreitWigner (Error # 0): badSpinStatisticalWeights

```
WARNING: The spin statical weights for L=0 sums to 0.461538461538, but should sum to 1.0.  You have too few chan
```

  2. Calculated and tabulated Q values disagree.
     reaction label 4: n[multiplicity:'2'] + Pm147 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -2881639.681289673 eV vs -5.7555e6 eV!
```

  3. Calculated and tabulated Q values disagree.
     reaction label 5: n[multiplicity:'3'] + Pm146 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -10541013.18344116 eV vs -1.3421e7 eV!
```

4. Calculated and tabulated Q values disagree.
   reaction label 6: n + H1 + Nd147 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -2995293.440353394 eV vs -5.8692e6 eV!
```

5. Calculated and tabulated Q values disagree.
   reaction label 7: Pm149 + gamma (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 10284303.4861145 eV vs 7.408e6 eV!
```

6. Calculated and tabulated Q values disagree.
   reaction label 8: n + He4 + Pr144 (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 4472470.040969849 eV vs 1.5992e6 eV!
```

7. Calculated and tabulated Q values disagree.
   reaction label 9: H1 + Nd148_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 4337491.728424072 eV vs 1.4642e6 eV!
```

8. Calculated and tabulated Q values disagree.
   reaction label 10: H2 + Nd147_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: -770727.3394165039 eV vs -3.6447e6 eV!
```

9. Calculated and tabulated Q values disagree.
   reaction label 11: H3 + Nd146_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 194302.5239257812 eV vs -2.6792e6 eV!
```

10. Calculated and tabulated Q values disagree.
    reaction label 12: He4 + Pr145_s (Error # 0): Q mismatch

```
WARNING: Calculated and tabulated Q-values disagree: 11419981.81997681 eV vs 8.546e6 eV!
```

- `njoy2012` Warnings:

1. Evaluation has no unresolved resonance parameters given
   unresr...calculation of unresolved resonance cross sections (0): No URR

```
 ---message from unresr---mat 6153 has no unresolved parameters
                          copy as is to nout
```

2. Evaluation has no unresolved resonance parameters given
   purr...probabalistic unresolved calculation (0): No URR

```
 ---message from purr---mat 6153 has no unresolved parameters
                        copy as is to nout
```

3. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (0): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 16
                          only mf4/mf5 provided
```

4. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (1): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 17
                          only mf4/mf5 provided
```

5. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (2): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 22
                          only mf4/mf5 provided
```

6. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (3): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 28
                          only mf4/mf5 provided
```

7. With the advent of the ENDF-6 format, it is possible to make evaluations that fully describe all the products of a nuclear reaction. Some carry-over evaluations from earlier ENDF/B versions also have this capability, but many do not. This message is intended to goad evaluators to improve things!
   groupr...compute self-shielded group-averaged cross-sections (4): GROUPR/conver (0)

```
 ---message from conver---cannot do complete particle production for mt= 91
                          only mf4/mf5 provided
```

- `acelst` Warnings:

1. The incident energy grid is not monotonic for this angular distribution
   0: Bad Ang. Dist.

```
 ACELST WARNING - Processing Ang.Dist.MT         2
                  E-grid non-monotonic   1.000000000E-06 1.000000000E-06
```